23 July 2001

CRUISE RESULTS
Fisheries Research Vessel Albatross IV
Cruise No. AL 01-06
Ecosystems Monitoring Survey Leg I

CRUISE PERIOD AND AREA

The cruise period was from 19 to 25 May 2001. The research vessel Albatross IV covered the Mid-Atlantic Bight and Southern New England regions (Figure 1) as the first part of the Late Spring Survey Period.

OBJECTIVES

The objective of the cruise was to assess the impact of changing biological and physical properties of the Mid-Atlantic Bight and Southern New England portions of the Northeast Continental Shelf ecosystem which influence the sustainable productivity of the living marine resources. A secondary objective of this cruise was the analysis of phytoplankton samples for nitrogen stable isotope ratios by filtering the discharge water of the flow-through instrumentation at 9 stations.

METHODS

The survey consisted of 55 randomly distributed stations at which the vessel stopped to lower instruments over the side.

Key parameters which were measured included water column temperature and salinity, ichthyo and zooplankton composition, abundance and distribution; along-track temperature, salinity, chlorophyll-a fluorescence and standard weather observations.

A double oblique tow using the 61-centimeter Bongo sampler and a CTD was made at all stations. The tow was made to approximately 5 meters above the bottom, or to a maximum depth of 200 meters, at a ship speed of 1.5 knots. Plankton sampling gear consisted of a 61-centimeter mouth diameter aluminum bongo frame with two 333-micron nylon mesh nets. A 45-kilogram lead ball was attached by an 80 centimeter length of 3/8-inch diameter chain below the aluminum Bongo frame to depress the sampler. A digital flowmeter was suspended within the mouth of

each sampler to determine the amount of water filtered by each net. The plankton sampling gear was deployed over the port stern quarter of the vessel by means of a conducting-cable winch and a boom. Plankton samples were preserved in a 5 percent solution of formalin in seawater. Tow depth was monitored in real time with a Seabird CTD profiler, which was hard-wired to the conductive towing cable, providing simultaneous depth, temperature and salinity data for each plankton tow.

Continuous monitoring of the seawater temperature, salinity, and chlorophyll-a level, at a depth of 2 meters was done along all of the cruise track by means of a thermosalinograph, and a flow-through fluorometer.

The thermosalinograph and flow-through fluorometer were connected to the Scientific Computing System installed in the laboratory area of the vessel by Atlantic Marine Center personnel. This system recorded output from the thermosalinograph, and the fluorometer every ten seconds, and gave the data records a time-date stamp from the GPS unit.

Samples for Seabird salinity data calibration were obtained on the 12-6 watch by taking a water sample from 30 or more meters depth using a 1.7 liter Niskin bottle at every fifth or sixth station. Calibration of the thermosalinograph and fluorometer from the surface flow-through system was undertaken on the 6-12 watch following the protocol outlined in the Ecosystem Monitoring Program Operations Manual, in review, pp 58 to 68.

Phytoplankton samples for nitrogen stable isotope ratio analysis were collected from the discharge water of the near-surface flow-through system. Six hundred to one thousand milliliters of seawater were pre-filtered through 300 micron mesh nitex gauze to remove most zooplankton, then filtered through a Whatman GFF glass-fiber filter and immediately frozen, for analysis ashore.

RESULTS

A summary of routine survey activities is presented in Table 1. Figure 1 shows the areal coverage achieved during the cruise. After sailing from the Office of Marine and Aviation Operations dock in Norfolk, Virginia on May 19 at 1400 EDT the vessel commenced sampling operations later that same day off the coast of Virginia. The Albatross IV proceeded northward towards Woods Hole, sampling along the continental shelf in a zag-pattern between inshore and offshore stations. Since winds remained calm for the entire cruise period, the shortest route between stations was chosen, without regard for the weather. Due to the absence of any adverse weather or mechanical problems, the vessel was able to completely sample the Mid-Atlantic

Bight area, and most of the Southern New England area, within the allotted cruise time. Five stations along the far eastern edge of the Southern New England area were not sampled due to time constraints, but these were picked up on the second part of the Ecosystems Monitoring Survey aboard the Delaware II DE 01-05 cruise, May 29 - June 6. Sampling operations were completed aboard the Albatross IV on Thursday, May 24 and the vessel tied up at the NMFS dock in Woods Hole at 0800 May 25.

DISPOSITION OF SAMPLES AND DATA

All samples and data, except for the nitrogen isotope samples and the CTD data, were delivered to the Ecosystems Monitoring Group of the NEFSC, Narragansett, RI, for quality control processing and further analysis. The nitrogen isotope samples were kept frozen and delivered to Rick McKinney at the US EPA Lab in Narragansett, RI and the CTD data was delivered to the Oceanography Branch of the NEFSC, Woods Hole, MA.

SCIENTIFIC PERSONNEL

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Table 1. STATION OPERATION REPORT FOR CRUISE AL0106

CAST	STA.	Date(GMT) dd	mm	yy	TIME(GMT) hr min	LAT	LONG	DEPTH meters	OPER. (b=bongo w=water N=nitrogen)
001	001	20	5	01	01 27	3614.0	7532.9	26	b, N #1
002	002	20	5	01	03 45	3628.1	7513.2	34	w
003	002	20	5	01	03 52	3628.1	7513.2	33	b
004	003	20	5	01	05 52	3644.6	7526.8	23	b, N #2
005	004	20	5	01	08 55	3647.4	7450.8	52	b
006	005	20	5	01	10 39	3701.8	7444.8	86	b
007	006	20	5	01	13 01	3702.8	7512.4	38	b
008	007	20	5	01	14 40	3717.3	7515.0	28	b
009	008	20	5	01	16 00	3724.9	7503.3	30	w
010	008	20	5	01	16 07	3724.8	7503.3	30	b
011	009	20	5	01	17 37	3735.8	7453.0	37	b
012	010	20	5	01	20 01	3734.7	7424.8	90	b, N #3
013	011	20	5	01	23 26	3757.0	7458.1	26	b
014	012	21	5	01	02 00	3800.4	7429.0	49	b
015	013	21	5	01	04 17	3809.5	7408.4	66	w
016	013	21	5	01	04 25	3809.3	7408.5	67	b
017	014	21	5	01	06 23	3816.3	7349.0	106	b
018	015	21	5	01	08 29	3831.6	7400.7	49	b,
019	016	21	5	01	10 29	3820.9	7420.5	43	b
020	017	21	5	01	12 06	3816.6	7438.7	34	b
021	018	21	5	01	14 21	3834.4	7450.9	24	b, N #4
022	019	21	5	01	16 00	3841.5	7435.4	32	w
023	019	21	5	01	16 10	3841.2	7435.4	32	b
024	020	21	5	01	17 53	3850.5	7419.5	34	b
025	021	21	5	01	20 46	3848.4	7345.7	50	b
026	022	22	5	01	00 09	3853.6	7310.0	81	b
027	023	22	5	01	02 42	3912.5	7252.3	84	b
028	024	22	5	01	04 31	3922.9	7237.5	110	w, N #5
029	024	22	5	01	04 39	3922.7	7237.7	111	b
030	025	22	5	01	06 44	3934.4	7222.0	107	b
031	026	22	5	01	09 46	3931.8	7301.5	68	b
032	027	22	5	01	12 43	3907.6	7323.0	56	b
033	028	22	5	01	15 03	3908.1	7349.8	32	b
034	029	22	5	01	16 27	3918.2	7357.4	32	w
035	029	22	5	01	16 35	3918.3	7357.5	31	b
036	030	22	5	01	18 43	3922.5	7332.3	46	b
037	031	22	5	01	20 13	3928.5	7349.3	33	b
038	032	22	5	01	21 35	3936.6	7356.5	26	b
039	033	22	5	01	22 51	3945.8	7348.4	25	b
040	034	23	5	01	01 14	3955.6	7323.0	49	b
041	035	23	5	01	03 34	4009.2	7307.4	45	b, N #6

Table 1. STATION OPERATION REPORT FOR CRUISE AL0106 (Continued)

CAST	STA	Date (GMT) dd mm yy	Time (GMT) hr min	LAT	LONG	Bottom Depth (meters)	Operation (b=bongo w=water N=nitrogen)
042	036	23 5 0105	16	4000.2	7251.6	53	w
043	036	23 5 01	05 24	4000.1	7251.6	54	b
044	037	23 5 01	09 06	4002.2	7220.5	74	b
045	038	23 5 01	10 57	4011.0	7237.9	59	b
046	039	23 5 01	13 15	4026.3	7255.5	41	b, N #7
047	040	23 5 01	15 28	4030.6	7235.4	44	b
048	041	23 5 01	17 51	4044.1	7219.6	40	w
049	041	23 5 01	17 58	4044.1	7219.8	40	b
050	042	23 5 01	20 46	4025.5	7205.8	61	b
051	043	24 5 01	00 38	4005.3	7134.7	88	b, N #8
052	044	24 5 01	04 45	4014.9	7049.5	121	w
053	044	24 5 01	04 52	4014.8	7049.6	121	b
054	045	24 5 01	10 36	4006.2	6949.2	109	b
055	046	24 5 01	12 31	4014.1	6932.3	81	b
056	047	24 5 01	14 40	4029.7	6945.5	71	b
057	048	24 5 01	17 16	4053.6	6937.0	40	w
058	048	24 5 01	17 23	4053.5	6937.0	40	b
059	049	24 5 01	18 55	4042.2	6948.8	49	b
060	050	24 5 01	20 16	4037.8	7003.5	51	b
061	051	24 5 01	22 05	4028.7	7024.6	69	b
062	052	25 5 01	00 25	4034.4	7052.3	70	b
063	053	25 5 01	02 47	4043.8	7116.0	58	b
064	054	25 5 01	04 28	4057.9	7113.0	52	w
065	054	25 5 01	04 36	4057.7	7112.9	53	b, N #9
066	055	25 5 01	06 11	4056.3	7055.0	54	b

TOTALS: Bongo Casts = 55
Bongo Samples = 110
Water Samples = 11
CTD Casts = 66
Nitrogen samples = 9

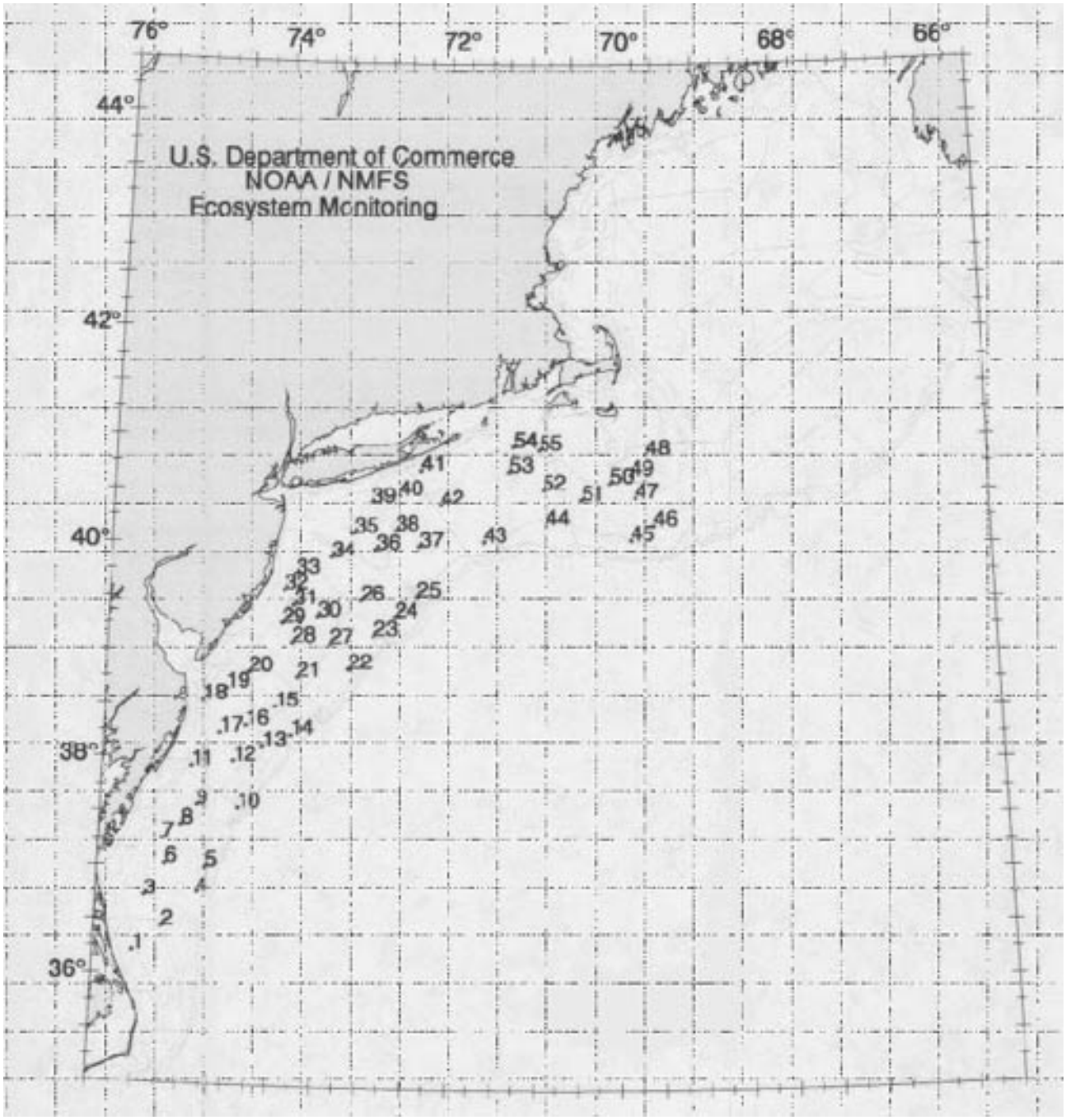

Figure 1. Station locations numbered consecutively for Late Spring Ecosystems Monitoring Cruise Leg I. AL 01-06, 19 - 25 May 2001.